

$$\Rightarrow \text{If } [2 \ 1 \ 3] \begin{bmatrix} -1 & 0 & -1 \\ -1 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix} = A, \text{ find } A.$$

solution: We have, $[2 \ 1 \ 3]_{1 \times 3} \begin{bmatrix} -1 & 0 & -1 \\ -1 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}_{3 \times 3} \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}_{3 \times 1} = A$

$$\Rightarrow [2 \ 1 \ 3]_{1 \times 3} \begin{bmatrix} -1 + 0 + 1 \\ -1 + 0 + 0 \\ 0 + 0 - 1 \end{bmatrix}_{3 \times 1} = A$$

$$\Rightarrow [2 \ 1 \ 3]_{1 \times 3} \begin{bmatrix} 0 \\ -1 \\ -1 \end{bmatrix}_{3 \times 1} = A$$

$$\Rightarrow [0 \ -1 \ -3] = A$$

$$\Rightarrow A = \underline{[-4]}$$